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morning, especially of bright and hot days. Before changing to a pupa it usually crawls into the ground, getting down through some cracks or fissures in the floor of the house where it comes out. It descends to a depth of three or four inches before transforming. There is but a single generation in a year.

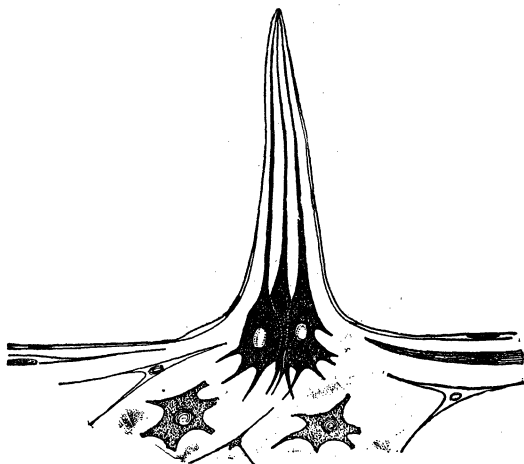
Entomological News.—The vine-growers of Algeria are now seriously troubled by the destruction caused by a Chrysomelid beetle, *Haltica ampelophaga*. In some places more than a third part of the whole production is destroyed by it. It feeds on grape-vine leaves only, eating them as fast as they appear, and ultimately killing the vine. As it is a very prolific insect, passing through at least five generations in a single summer, much is to be feared from it (*Science*, April 1).—Mr. George D. Hulst doubts the conclusion of Riley, that the dehiscent species of *Yucca* are fertilized only by the agency of *Pronuba yuccasella*. Mr. Hulst saw many honey-bees within the flowers before they closed in the forenoon, and only a small proportion of the capsules examined afterwards contained larvæ of *Pronuba* (*Entomologica Americana*, vol. ii. No. 12).—Miss Ormerod's "Tenth Report of Observations of Injurious Insects" has just appeared.

ZOOLOGY.

Artificial Parthenogenesis.—Two cases of parthenogenesis induced by artificial stimuli are of interest. The first is that recorded by Tichomiroff (*Archiv f. Anat. und Phys.*, 1886; *Phys. Abth. Suppl. Bd.*). He found, in the course of investigations instituted for another purpose, that the unfertilized eggs of the silkworm, under the influence of mechanical or chemical (strong sulphuric acid) stimuli, will develop. He concludes his short account with the following words: 1. "There can be no doubt that the eggs of *Bombyx mori* are capable of parthenogenetic development;" and, 2. "Such eggs which would not otherwise parthenogenetically develop may be induced to do so by stimuli." More interesting are the observations of Dr. J. Dewitz (*Biol. Centralblatt*, vii. p. 93). Normal parthenogenesis has been well authenticated in the case of the silkworms, but not in the Amphibia. Dr. Dewitz, with another purpose in view, placed some unfertilized frogs' eggs in a solution of corrosive sublimate, and, to his great astonishment, the next morning found them swollen and segmented. Some showed but one division, while others had divided several times. A few were irregular in their segmentation, but in the majority the normal order was followed. These facts were observed on the eggs of *Rana fusca*, *R. esculenta*, and *Hyla arborea*, and it was noticed that but a short immersion in the sublimate solution was sufficient to induce the segmentation.

Vitality of Encysted Forms.—Nussbaum, while studying the phenomena of digestion in *Hydra*, noticed that in the excrements of the polyp there was a living embryo of *Daphnia*, the mother of which had just been eaten by the *Hydra*. The nettle-cells which killed the parent had not been able to affect the young. Led by this, Nussbaum killed pregnant female *Daphniæ* with absolute alcohol and observed that the embryos afterwards developed, proving that the cyst was a great protection. This immunity of the *Daphnia* embryo is, says Nussbaum, of great importance to the perpetuation of both the *Hydras* as well as of the *Daphnia* itself. With their voracious appetites, a few *Hydras* would rapidly depopulate a pool, and then would have to starve themselves were it not for the protection afforded the embryos by these resisting cysts. A similar instance is afforded by the seeds of many plants which, as is well known, pass uninjured through the alimentary tracts of many fruit-eating animals.

Sense-Organs of Sponges.—Von Lendenfeld describes, under the name synocils, some peculiar sense-organs in *Grantia* which had previously been described by Stewart as palpo-cils. From the surface project long conical processes, about 0.1 mm. in length, most numerous near the incurrent pores. These organs



Synocils of *Grantia ciliata*. After von Lendenfeld.

consist of prolongations of the mesodermal intercellular substance, and are apparently covered with a delicate epithelium. At the base are several oval nuclei, each surrounded with an irregular envelope of protoplasm, which sends out root-like processes, one of which runs to the tip of the synocil (see cut).

Von Lendenfeld suggests that the reason why these organs have escaped observation by all who have studied living sponges is that they are ordinarily retracted, and he recalls certain observations which he had previously made on the retracted sense-organs of other sponges. He hints at interesting comparisons of these with some of the peculiar sense-organs of the higher Metazoa, but without entering into any detail.

Organ of Smell in *Crepidula*.—The organ of smell, or osphradium, of gasteropod molluscs is a patch of sensory epithelium, which is placed in close relationship with the two normal gills with which these animals are provided. In many forms, however, one of these gills is aborted, and occasionally its place is taken by another branchial organ (*e.g.*, *Patella*), which has no relation to the typical branchiæ. In many forms there is also what is known as the rudimentary gill; but Spengel has shown that this is not respiratory in its function, but is rather a sensory organ, variously modified in its appearance. Dr. H. L. Osborn describes (*Zool. Anzeiger*, x. 118) this osphradium as it occurs in *Crepidula fornicata*. In this species the gill fills almost the entire mantle-cavity, but on the left of the gill-ridge is a low ridge of eighteen or twenty papillæ, each with a globular head and a short peduncle. This is the osphradium. The ridge from which the papillæ arise is traversed by a nerve sending branches into each papilla. In addition to this Dr. Osborn notices the existence of a peculiar high epithelium clothing the osphradial ridge, which differs from that on any other part of the mantle, and forms what appears to be a specialized organ. In this connection it may be mentioned that an investigation of the relations of osphradium to branchiæ in the limpet *Acmaea* would be productive of important results in settling the affinities of the family.

A Larval *Galeodes*.—The Arachnida of the sub-order Solifugæ are so little known that Croneberg's recent description of a larval stage of one (*Zool. Anzeiger*, No. 247, 1887) is worthy of mention. These animals are peculiar among arachnids in the possession of a segmented cephalo-thorax. Our native species have been studied by the late J. D. Putnam, whose posthumous account was published by the Davenport Academy of Sciences. Croneberg's account relates to *Galeodes* (or *Solpuga*) *araneoides* of the Transcaspiian steppes. The young eggs had a diameter of 2 mm., while those ready to hatch measured 3.5 mm. Before hatching the abdomen is very large, while the cephalo-thorax (which is not represented as segmented in the figure) is thin, small, and quadrate. On hatching it appears as if the contents of the abdomen had been forced into the cephalo-thorax, as the former is now more ovoid, while the latter, as well as its appendages, are greatly distended. The cephalo-thorax and abdomen

now show a weak segmentation, but the appendages as yet lack joints or tarsal claws. The hairy covering of the adult is lacking, there being only a double row of twelve bristles on the abdomen. There is no trace of abdominal feet at this stage, but they may have been present earlier. An embryonic wing-like process extends from the cephalothorax, on either side, between the third and fourth pairs of feet. No trace of it occurs in the adult. Its function is extremely problematical, and Croneberg only recalls similar organs in the embryos of Asellus.

Zoological News.—PROTOZOA.—R. S. Bergh has recently described two cases of division in the Dino-flagellates. (He employs this term for the old group of Cilio-flagellates, as the latter name is a misnomer; for, as was shown by Spengel in 1881, and by Klebs in 1883, independently there are no cilia in these forms.) The cases observed (*Zool. Jahrbuch*, ii.) were in *Ceratium tripos* and *Dinophycis acuta*. In each the process was essentially similar. For instance, in the former species the division took place across the body, one horn going with one half and the two curved horns with the other. Each half then proceeded to develop an envelope and the missing horn or horns.

CœLENTERATES.—Under this term Von Lendenfeld gives (Spengel's *Zool. Jahrbuch*, ii.) a review of the fresh-water sponges and Cœlenterates of Australia, enumerating ten species in all. He describes a new sponge, *Tubella nigra*, and a new hydroid, *Cordylophora whiteleggei*. He also shows that the name *Hydra oligactes* Pallas (1766) has priority over *Hydra fusca* Linné (1789). In his remarks upon the fresh-water fauna of Australia he comments on the fact that not only in the Cœlenterates, but in the Protozoa, all the species are closely allied to marine forms.

ECHINODERMS.—P. H. Carpenter, in a note in *Nature*, says that the cysts on *Comatula rosea*, which he regarded as indicative of the existence of a British species of Myzostoma, prove not to be caused by those animals, but by a problematical organism resembling an egg in an early stage of segmentation, but in the poor state of the material at hand not capable of being carefully studied. Stains, in the hands of Dr. Graaf, yielded no nuclei.

Dr. Ludwig gives a paper on the Holothurians collected by the recent voyage of the Italian corvette "Pisani," around the world, and supplements it by descriptions of those collected by the Italian ship "Vedetta" in the Red Sea. These papers are in vol. ii. of the *Zool. Jahrbuch*. In vol. i. of the same publication, which has just come to hand, the same student has a review of the Echinoderm fauna of Bering Sea.

WORMS.—Villot gives (*Ann. Sci. Nat.*, VII., i.) a supplementary revision of the hair-worms (Gordiaceæ), which changes somewhat his former paper of a dozen years ago (*Arch. Zool. Exp.*). He

regards Leidy's *Gordius subspiralis* as being really *G. aquaticus*, while the species described by the American author under the latter name is something else. Leidy's *Gordius robustus* is probably *G. violaceus* Baird.

U. Drago describes (*Bull. Soc. Ent. Ital.*, xix., 1887) a new genus and species of Oligochæte worm (*Epithelphusa catanensis*), which occurs as a parasite on the gills of the Sicilian land-crab *Thelphusa fluviatilis*. It belongs to the family Enchytræidæ.

Kennel has a paper (*Zool. Jahrbuch*, ii.) on the land-leeches of tropical America, enumerating three species, of which *Cylicobdella coccinea* belongs to a genus before known from the same region, while *Lumbricobdella schæfferi* is a new genus, as well as a new species. The paper goes considerably into habits as well as structure, but contains no reference to Dr. Whitman's recent work on the land-leeches of Japan, already noticed in these columns.

R. von Lendenfeld notices (*Zool. Jahrbuch*, i.) the occurrence of *Tænia ecclinococcus* in Australia, and concludes, from the peculiarities of its distribution, etc., that the dingo, or native dog, is largely responsible for its dissemination.

CRUSTACEA.—At the meeting of the Linnæan Society of London a paper was read by Dr. P. P. C. Hoek, of Leiden, upon the rare barnacle *Dichelaspis pellucida* Darwin. The genus *Dichelaspis* is a genus of barnacles, allied to *Lepas*, of which several species are known. Some occur upon the bodies of various Crustacea, but this species is only known from the sea-snakes of the Indian Ocean. Darwin obtained his specimens from the scales of one of these Hydrophidæ, and since his description was published no other specimen has been recorded until the present one, which was likewise found attached to another of these snakes from the Mergui Archipelago.

Maurice Leger describes (*Ann. Sci. Nat.*, VII., i.) two cases of monstrosities in the spiny lobster (*Palinurus*). In one instance the antennula of one side is terminated by three flagella, while in the other the fourth left thoracic foot has three branches arising from the coxa, each with the normal number of joints. In cases like these it seems difficult to draw any important morphological conclusions, for in zoology teratology does not seem to have the value it has in botany. The paper is illustrated with a well-drawn plate.

Garpini has a paper on the anatomy of the Cypridinæ, illustrated by five plates, in the nineteenth volume of the "Bulletin of the Italian Entomological Society." The paper is chiefly descriptive, and enters but little into comparisons.

BIRDS.—The second English specimen of the Harlequin duck (*Cosmonetta histrionica*) was taken in Northumberland in December last. It is normally a member of the Arctic fauna, being circumpolar in its range.

FISHES.—Prof. C. Gilbert has an important paper on rare and little-known etheostomine Percidæ in the "Proceeds. of the U. S. National Museum." Several new species from Southwestern rivers are described.

Prof. A. Heilprin describes, in a very imperfect manner, a catfish which he supposes to be new, from Lake Okeechobee, Florida. It is a pity that Professor Heilprin did not, in his description, imitate some of the numerous good descriptions to be found in American ichthyological literature.

Dr. G. A. Boulenger has recently described some new species of fishes from the Congo.

BATRACHIA AND REPTILIA.—Dr. G. A. Boulenger has published, in the *Annals and Magazine of Natural History*, a list of the species from the department of Rio Grande do Sul of Brazil. He enumerates: Testudinata, 6; Crocodilia, 1; Lacertilia, 14; Ophidia, 42; Batrachia anura, 27; do. Urodela cæciliidæ, 1. Total, 63 Reptilia, 28 Batrachia.

Professor Cope describes, in the "Proceedings of the U. S. National Museum," a new species of water-snake, of the genus *Tropidonotus*, allied to the *T. woodhousei*, which he calls *T. bisectus*. It is only known from a specimen which was killed in the grounds of the armory, near the National Museum, in the city of Washington, D. C.

Dr. G. A. Boulenger has distinguished two species of the genus *Bombinator* in Europe. The *B. bombina* Linn. is yellow below, has closely-placed dermal tubercles, etc., and inhabits high ground. The *B. igneus* Linn. inhabits lower levels, and is black below, with large crimson splotches, and has the dermal tubercles sparse, etc.

EMBRYOLOGY.*

The Embryology of the Monotremata and Marsupialia.—In *Nature* for March 31, 1887, the following abstract is given of the first part of a memoir by W. H. Caldwell, with the above title, which was presented at the meeting of the Royal Society held on March 17 last. Deeming the subject one of unusual interest, the author's abstract is here given in full:

"(1) *The Egg-Membranes*.—In Monotremata, in very young ova, a fine membrane exists between the single row of follicular cells and the substance of the ovum. This membrane, which I will call *the vitelline membrane*, at first increases in thickness with the growth of the ovum, and through it pass numerous fine protoplasmic processes connecting the protoplasm of the follicular cells with that of the ovum, and serving to conduct food-granules, which, appearing in the neighborhood of the nuclei of the cells,

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